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ABSTRACT

This catalog contains an inventory of 16mm films, filmstrips, film loops, slide programs, records, and publications about the marine sciences and sea life that are available from VIMS/Sea Grant Marine Education Center; information on the borrowing of the AV materials is included, as well as prices for books and leaflets. The entries are listed according to media format with descriptions of length, grade level, and content. (CHC)

AUDIOVISUAL AIDS AND PUBLICATIONS

AVAILABLE FROM THE

VIMS/SEA GRANT MARINE EDUCATION CENTER

compiled by Sue Gammisch, Coordinator

Illustrated by Dick Cook

A Marine Advisory Services Program
Virginia Institute of Marine Science
Gloucester Point, VA 23062

This work is the result of research sponsored in part by the Virginia Institute of Marine Science Institutional Sea Grant Program, supported by the Office of Sea Grant, NOAA, under Grant No.s 04-8-MOI-85 and NA79AA-D-0005. The U.S. Government is authorized to produce and distribute reprints for governmental purposes notwithstanding any copyright notation that may appear hereon.

This inventory contains 16mm films, filmstrips, film loops, slide programs, records, and publications available from VIMS/Sea Grant Marine Education Center. To borrow the audiovisual aids or to obtain copies of publications write to:

VIMS/SEA GRANT
MARINE EDUCATION CENTER
Virginia Institute of Marine Science
Gloucester Point, VA 23062
(804) 642-2111, Ext. 111

These teaching aids are booked heavily. Please send your request in as early as possible, preferably about one month before the date you want to show the film. Give an alternate date because the film may be already booked for the first date.

After the last showing, THE FILM SHOULD BE REWOUND ONTO ITS OWN REEL. The film should then be placed in its own shipping case. Return shipments must be prepaid and insured.

The attendance record report form is very important. This form will be shipped in the case with the film. Immediately after showing, FILL OUT THE FORM AND RETURN IT IN THE SHIPPING CASE.

Give the exact address to which the film is to be shipped.

Film loans are limited to one week (exclusive of mailing time).

Audio-visual aids are listed in this brochure in the following categories:

All audio-visual aids, except for 16 mm films, may be borrowed without charge. These films may be borrowed for $7.50.

Titles in each category are listed alphabetically, followed by the running time, an annotation and the grade level(s) for which the audio-visual aid is most suitable.

GRADE LEVEL CODE:

P	Preschool, Primary	K-3
E	Elementary	4-6
I	Intermediate	7-9
H	High School	10-12
A	Adult	Adult, College

16mm COLOR FILMS

THE BEACH – A RIVER OF SAND (H,A)
20 minutes

Shows seasonal variations in the beach profile and effects of waves and currents on the beach configuration. Time-lapse photography and model experiments demonstrate how sand beaches are created and how they can be destroyed; the influence of manmade construction is also brought into focus.

BILLION DOLLAR MARSH (H,A)
45 minutes (long version)
26 minutes (short version)

Stretching over 2,500 miles from Maine to Florida lies one of the greatest areas of marshland in the world. To developers, these marshes are so many thousands of wasted acres that could be drained for housing and industry; to others, the marsh must be preserved as is. This film, shot in the wetlands of New Jersey, Virginia and Georgia, explores the conflicting points of view.

THE BOUNDLESS SEAS (H,A)
50 minutes (2 reels)

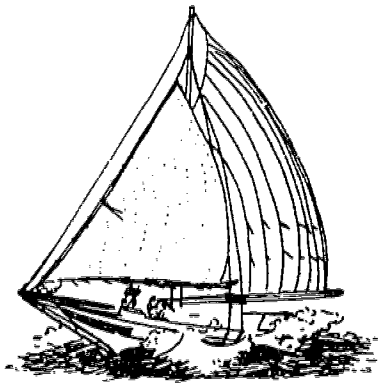
The Boundless Seas, Parts I and II, present a panoramic as well as logical and dramatic view of the formation of our Earth and seas, the history of our lands and waters and their interdependence with today's society. A kaleidoscope of pictures and concepts, the film ranges from the Earth and its underwater formations and phenomena to new knowledge gathered from space. The film is not merely a study of oceanography. It is, as well, an overview of Earth's geology and geography and a review of one theory of our solar system's original formation. The life of our one great ocean, the riches in its depths, its mineralology and ecology and the changes which man has caused in the past and intends in the future are the vast subjects of these two films. They are presented in two functional, twenty-five minute packages.

CHALLENGE OF THE OCEANS (I,H)
29 minutes

Explanation of the physical aspects of the ocean, including the variety of currents, the relationship of the dynamics of the oceans to weather and climate and the composition of ocean waters. Reviews the main instruments and techniques used in oceanography in the 1960's.

CHESAPEAKE BLUES (I,H)
10 minutes

The film contains scenes of the complete life cycle of the blue crab, including larval stages, growth and migration to the upper Chesapeake Bay. Catching and eating blue crabs is also shown.



CHESAPEAKE CHALLENGE (H,A)
50 minutes

This film depicts the sailboat race from Baltimore to Norfolk during the summer of 1978. In addition to the exciting race, the varied aspects of Chesapeake Bay—the rage of storms, fragility of marshes, bustle of shipping, tranquility of the skipjacks and the beauty of the Bay—are presented through photography as well as ballads. An educational cruise aboard a VIMS Research Vessel is included.

COMMERCIAL FISHING IN THE CHESAPEAKE BAY (I,H,A)
36 minutes

Treats Virginia's tidal water and the economically important fish that are caught there. The film documents the netting methods used to catch the various species, from shad and herring in the spring through menhaden, spot and croaker in the summer and fall, with each major type of operation fully depicted.

DEEP BLUE WORLD (E,I
7 minutes

Although we see the astonishing variety that exists beneath the sea, the film is essentially an underwater fantasy that conveys the wonder, joy and excitement of a SCUBA dive. After a long descent through deep blues, we begin to feel the mystery of the environment. We see the strangness of its creatures. Once we are acclimated, the beauty of it all begins to grow—coral structures, flower-like anemones— pastels dominate. The tempo quickens, colors brighten; then follows a purely psychedelic section of excitement, brightness, brilliant color flashes, shapes. Finally we ascend back into the blues of the upper waters.

DOLPHINS (E,I,H,A)
22 minutes

Presented in this film are the characteristics and habits of a most delightful water mammal, the dolphin. About 50 or 60 million years ago, according to many paleontologists, the dolphin's ancestor was a furry, four-legged animal who lived on land. Then in a sort of reverse evolution, it returned to the sea and became adapted to a life in the water. The adaptations, communication and habits of our friends of the sea are discussed in this delightfully entertaining and informative film. Narrated by Lorne Greene.

THE DRIFTING OF THE CONTINENTS (H,A)
50 minutes

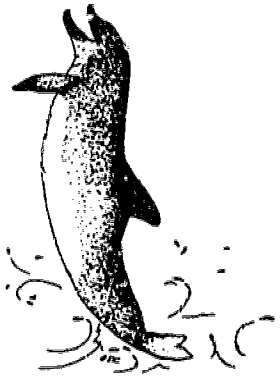
Recent discoveries in paleomagnetism, oceanography and seismology are affecting every earth science from geochemistry to earthquake engineering. Scientists now know where each continent was in relation to the poles at any given point in history. This is a fact filled, informative study of the revolution in geology which is turning the earth sciences upside down.

ESTUARINE HERITAGE (I,H)
28 minutes

Stresses the role of estuaries for important species such as shrimp, crabs, oysters, clams and menhaden and other finfish; as the habitat of waterfowl and furbearing animals; and as a recreational and aesthetic resource. Depicts major threats to estuarine resources; pesticides, municipal pollution, industrial waste, dredging and filling. Recommends methods of conservation.

ESTUARY (I,H,A)
28 minutes

The bays, lagoons and ends of the rivers are the estuaries of the United States on which a large percentage of our food from the sea is dependent. Their uses by industry, recreationists and seafood harvesters are depicted, stressing the great value of the estuary and the need for planning. Sponsored by EPA.



...teristics of fish are related to beha... such as movement, caring for the youn... defense. Artwork, music and vivid und... photography make adaptation and beha... clear to young viewers. Words from pr... reading programs are captioned for ...

HOW LEVEL IS SEA LEVEL? (H,A)
3 minutes

Provides data that will enable viewers to discuss and investigate the question: How level is sea level? Following the showing of this film, students should be able to define mean sea level and explain how it is determined, describe factors that influence sea level at various locations on the Earth and demonstrate comprehension of concepts presented in the film by analyzing the problem of creating a sea level canal in Central America.

HURRICANE DECISION (I,H,A)
14 minutes

A hurricane awareness and preparedness film containing lifesaving information for persons living in, or those who may visit, hurricane-prone areas. The population of the East and Gulf coasts of the United States keep growing. Almost every year lives are lost in these areas because of hurricanes. The film points out dangers of storm surge, wind and inland flooding caused by hurricanes.

INCONSTANT AIR (H)
25 minutes

The history of meteorology is examined in this film. The movement of weather, weather forecasting and the equipment and methodology of observing weather patterns and our atmosphere are discussed. Also included in the film is the relationship between the sea and the topography of the land on our weather.

IT'S YOUR COAST (H,A)
28 minutes

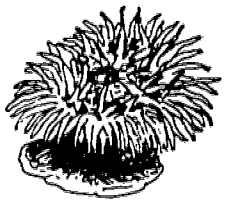
Visit Naples, Florida; Portland, Maine; Chicago, Illinois; and Seattle, Washington to discuss such subjects as land development, oil pollution and beach erosion. Stresses the importance of the coast and the fact that anyone can express a viewpoint during the planning for coastal management.

LEARNING ABOUT LIQUIDS, SOLIDS AND GASSES (E,I)
11 minutes

Ice, water—it's all the same thing, as children learn when they explore the properties of matter. While changing substances from one state of matter to another, children learn about shape, mass and weight. The concept of lighter-than-air gases introduces a simple explanation of molecular action.

A LOOK AT VIRGINIA'S NATURAL RESOURCES (H,A)
27 minutes

The variety, abundance and importance of the natural resources of Virginia are discussed.



MARINE INVERTEBRATES OF THE CHESAPEAKE (E,I)
9 minutes

Shows representative shallow water invertebrates in their natural habitat in Chesapeake Bay. Presents these animals from the low order hydroid to the high order crab and stimulates further investigation of these and other marine animals.

METHODS AND INSTRUMENTS OF OCEANOGRAPHY (H,A)
18 minutes

An adequate introduction of oceanographic methods and instruments. Some methods and instruments are explained and photographed clearly, and in some cases their operation is explained by animation. Useful only as a brief overview of oceanographic instruments.

MYSTERIES OF THE DEEP (E,I,H)
24 minutes

This fascinating film explores the depths of the ocean to see some of the many interesting creatures to be found there.

PLANKTON (I,H)
12 minutes

The wondrous variety of plants and animals comprising the ocean's plankton community is the subject of this film. Look closely at "plankton soup" and discover what some of these forms of marine life look like and how they function. Observe the incredible variety and precise geometric symmetry of Radiolaria. Each is as unique as a snowflake and justly merits the radiolarian nickname, "jewel of the sea." Learn how planktonic plants and animals figure in complex food webs. Minute planktonic plants are at the bottom of a food web that may end with planktonic animals as complex and large as a jellyfish.

THE RESTLESS SEA (E,I,H,A)
54 minutes (2 reels)

Animated sequences illustrate work of oceanographers in searching out complex and interwoven relationships in nature and in the sea. Filmed action from above and below surface shows various instruments used in oceanography.

THE RIGHT WHALE: AN ENDANGERED SPECIES (I,H,A)
23 minutes

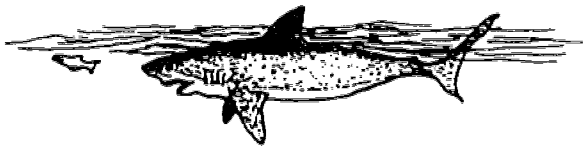
The right whale is perhaps the rarest of all the great whales. Join zoologist Roger Payne on the Peninsula Valdes in Argentina where, with the help of the National Geographic Society, he has been studying these mammoth creatures since 1970.

THE SALT MARSHES (E,I,H)
28 minutes

The importance of the salt marsh and the role it plays in the delicate ecosystem is depicted in this film. How a marsh is formed and the variety of plants and animals that inhabit the marsh are also described.

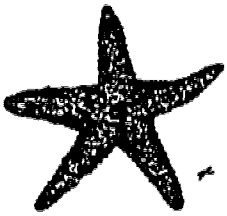
SHELLFISHING IN THE CHESAPEAKE (I,H,A)
25 minutes

A companion to "Commercial Fishing in the Chesapeake," this film shows the methods and equipment used in catching Virginia's oysters, crabs and clams.



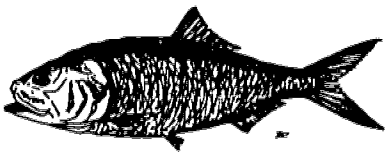
SHARK! DANGER IN THE SEA (I,H,A)
26 minutes

Current experiments being conducted on the infamous "villian" of the sea are presented in this film. Included are studies of the shark's color vision, the force of his bite, his pre-attack behavior and methods of avoiding attack.



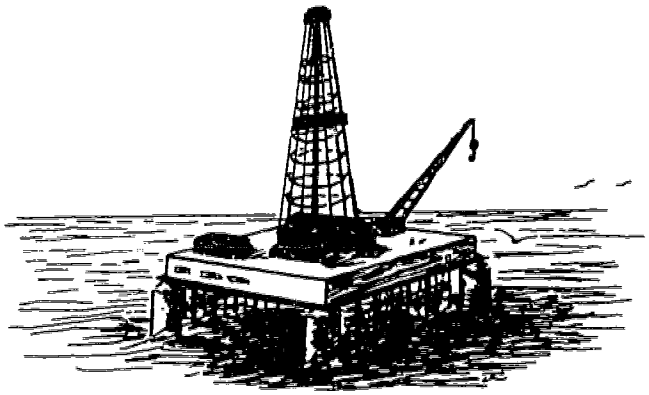
THE STARFISH (E,I,H)
8 minutes

The Starfish is a study of how underwater creatures move, and how they get food and escape from enemies. The film shows the starfish and the way it stalks its prey and uses its strong arms to grasp a shellfish and pull it open, so that the soft inner body can be consumed by the starfish. The starfish ejects its stomach to surround the food, digests it and then sucks its stomach back into its body. It pursues other prey, which use their locomotive methods to escape, and the starfish continues to hunt.



THE STORY OF MENHADEN (I,H,A)
20 minutes

The story of the menhaden fishery, one of the oldest and largest fisheries in the United States, showing the uses, methods of capture and processing of the fish.

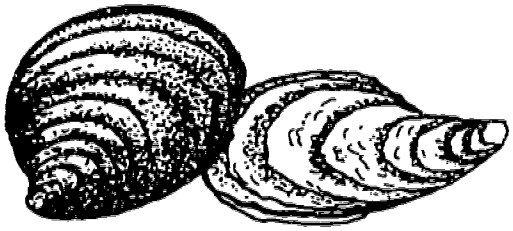


THE STORY OF OIL AND GAS (I,H,A)
27 minutes

The main theme of this film is explaining how to reach offshore oil and gas, from the information of hydrocarbons in the Earth's crust to the construction of drilling and production of platforms. Vivid animation portrays the entrapment of hydrocarbons in the Earth's crust. Seismic offshore exploration is used to determine whether or not a site may be a promising place to drill. The next step in the retrieval of oil or gas is obtaining the purchase rights and conducting a survey. The final segment of the film describes the design, fabrication and installation of the platforms. A self-contained platform with an area for drilling operations, production and living quarters is shown in the construction phase and while being towed to the drilling site. While most of the film is designed as an advertisement, the information covered is knowledgeable and precise.

SWIMMY (P)
6 minutes

In a beautiful undersea world, a small fish outwits the hungry tuna. Animated by Leo Lionni and Giulio Gianini.



TAKE TWO FROM THE SEA (I,H)
28 minutes

Two young hopefuls are surprised to learn that their "big break" as Hollywood film makers is to make a documentary on oysters and clams – about which they know nothing. They travel to the West, Gulf and East Coasts' oyster–clam shellfishing sites, photographing the harvesting, aquaculture, processing, cooking and serving of shellfish.

TWO HUNDRED MILES (A)
28 minutes

A panel discussion on extended fisheries jurisdiction over the continental shelf of the United States.

WATERBOUND (H,A)
20 minutes

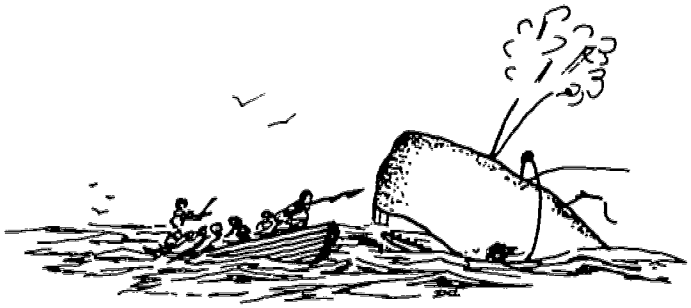
Set to lively banjo music, this short film presents the effects of erosion on the Outer Banks of North Carolina.

WATERMEN OF THE CHESAPEAKE (I,H,A)
28 minutes

Shows the impact of Chesapeake Bay and its resources on a large segment of America, from early days to the present. Activities of fishermen in the harvest of clams, oysters, crabs and flounder are portrayed. Highlights include America's only sailpowered oyster fleet, the crab derby at Crisfield, MD and the wild pony penning at Chincoteague, Va.

WHALES: CAN THEY BE SAVED? (E,I,H,A)
24 minutes

Depicts and describes a variety of species within the two major branches of the whale family. Traces the evolution of whales from land animals to sea animals. Constrasts modern whaling techniques with those of the past. Shows how dolphins and other whales are trained to perform. Identifies species in danger of extinction and emphasizes the importance of saving the endangered whales.



16mm SILENT FILMS

OOPLASMIC SEGREGATION DURING ASCIDIAN DEVELOPMENT (H,A)
6 minutes

Formation of the yellow cresent through cytoplasmic streaming and segregation of crescent materials during cleavage and development are shown in Boltenia villosa and Styela partita.

ECHINODERM DEVELOPMENT 1: FERTILIZATION AND CLEAVAGE (H,A)

4 minutes

Sperm entry, movement, fusion of the pronuclei and cleavage including micromere formation are shown.

ECHINODERM DEVELOPMENT 2: GASTRULATION (H,A)
4 minutes

The film deals with the cell movements and cell processes which appear to play a significant part in the changing of the blastula into a gastrula. A detailed time lapse sequence illustrates cell movements and formation of the gut tube.

8mm COLOR FILM LOOPS

PLANKTON: THE LIVING SEA (H)
6 film loops

Every student is taught that plankton produce 90% of the Earth's oxygen and comprise the single most important link in the vast and complex food web of the oceans. These films show the diversity, mobility and feeding relationships of the more common planktonic forms, using spectacular dark-ground microcinematology.

Loops include the following subjects:

Collecting plankton, 3 min. 40 sec.
Plankton: Diversity, 3 min. 40 sec.
Plankton: Mobility, 3 min. 40 sec.
Plankton: Food Webs and Feeding Relationships, 3 min. 40 sec.
Plankton: Larval Forms, 3 min. 40 sec.
Plankton: Adult Forms, 3 min. 40 sec.

EXPLORING MARINE HABITATS (H)
6 film loops

This series takes your students on an exciting tour of six different coastal habitats and shows them the great variety of marine life to be found in the clear waters of the Caribbean. For obvious reasons, these habitats are inaccessible to the great majority of children, yet these films bring the Caribbean and its abundance of coastal marine life within easy reach of any science teacher and/or student. Captions are used to identify each creature and each prominent aspect of its environment.

Loops include the following subjects:

Sand Shore Environment, 3 min. 15 sec.
Rocky Shore Environment, 3 min. 25 sec.
Grass Bottom Environment, 3 min. 40 sec.
Rock Bottom Environment, 3 min. 45 sec.
Sand Bottom Environment, 3 min. 35 sec.
Under Rock Environment, 3 min. 25 sec.

STICKLEBACK (H)
2 film loops

Strictly patterned, highly specific courtship behavior is instinctive to many animals, in such different groups as insects, fish, birds and mammals. Since all instincts are hereditary, the fact that so many animals have complex courtship patterns suggest that these patterns are an advantage to these animals in terms of species survival and natural selection.

Title of the loops are:

Courtship Behavior of the Stickleback, 4 min.
Stickleback: Experiments with Models, 4 min.

FILMSTRIPS/CASSETTES

ALGAE (I,H)
10 minutes

These simple plants (or plant-like protists) are extremely important product organisms in both fresh water and marine ecosystems. The life cycle and structures of certain algae suggest an evolutionary relationship between algae and the higher multicellular plant forms.

AQUACULTURE (H,A)
26 minutes

The production of marine resources in controlled environments are described in this program. Methods of farming fish and shellfish and new research methods such as artificial upwelling are explained.

CHESAPEAKE AT BAY – FORMATION (I,H)
14 minutes

CHESAPEAKE AT BAY – 20th CENTURY (I,H)
14 minutes

Water, the birthplace of life on Earth and the basic ingredient of all living things, provides the focus for this inquiry on Chesapeake Bay. Chesapeake Bay has two histories, both of great interest and concern to students today. Both the story of a man's role in settling and using the Bay and the story of life within her waters depicted. This filmstrip is an exploration of the Bay. The photography, whether it be a picture of a man at work on the Bay or a highly unusual photo of the participant in the food chain, offers the teacher and the student a look at the role of man and his environment.

THE ECOLOGY OF CORAL REEFS (I,H)
10 minutes

Coral reefs are studies in animal diversity. Not only are there many different kinds of corals, but each major animal phyla is represented in the typical reef community. This filmstrip examines the most obvious reef inhabitants – the corals, anemones, snails, clams, nudibranchs, annelids, shrimps, crabs, urchins, basket stars, crinoids, reef dwelling starfish and the many splendid fishes found in these enchanting sea environments.

THE ECOLOGY OF MUD FLATS (I,H)
9 minutes

Mud flats often rival the rocky coast in biomass. Their importance in marine ecology is that they serve as nurseries for many of the sea's larger fish and shell fish. We find [illegible] different life styles on the mud flat: burrowing filter feeders, such as clams, detritus eaters (including shrimp of various kinds), predators (certain worms and snails), scavengers and commensal organisms, making the mud flat a highly diversified marine community.

THE ECOLOGY OF ROCKY COASTS (I,H)
11 minutes

The rocky coast environment might be described as "hazardous to life", yet here life abounds. We discover how shore dwellers combat wave shock, drying and temperature extremes; how life on rocky shores is distributed in zones and how intertidal invertebrates live and reproduce in this harsh environment.

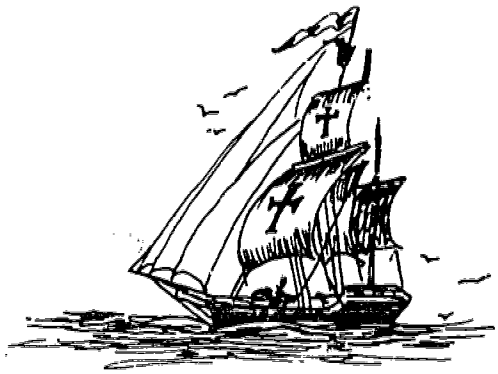
THE ECOLOGY OF SANDY BEACHES (I,H)
9 minutes

Although they may appear sterile, sandy beaches often support beautifully adapted communities of living things. Sand crabs filter the waves for plankton and are in turn preyed on by fishes and birds. Sand dollars prowl the protected areas, while further up the beach, beach hoppers scavenge along the drift rows. Toward land, a remarkable community of specially adapted plant species stabilizes the sand dunes.

FISHERY PRODUCTS INSPECTION (H)
3 filmstrips, 3 cassettes
10 minutes each

This kit deals with inspection services now being offered by the National Marine Fisheries Service, an agency of the United States Department of Commerce. Fishery products are an increasingly important part of the American diet. The materials in this kit are intended to help your students – future consumers – learn what to look for when purchasing packaged fishery products. They will learn how the Federal Government, in cooperation with the fisheries industry, is working to insure quality and wholesomeness in

fishery products along the route from sea to marketplace. See what role federal inspectors play, learn what the levels of inspection are and find out what the federal marks and certificates mean.



GREAT EXPLORERS (I,H)
4 filmstrips, 4 cassettes
11–14 minutes each

Voyages of adventure and discovery. Four famous explorers of uncharted waters find new lands and meet new peoples — and expand the unknown world. Columbus ventures west in search of gold and species of the East — finds the New World. Magellan joins the first European expedition to sail around the world. Drake voyages aboard the Golden Hind — attacks Spanish ships — sails to California. Cook charts and explores Pacific Islands, Australia and Alaska.

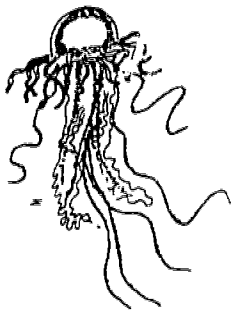
THE HISTORY OF WATER TRANSPORTATION IN VIRGINIA (I)
2 filmstrips, 2 cassettes

Part One, 10 minutes

The early history of water transportation in Virginia is discussed. When our ancestors first crossed the Atlantic and came to Jamestown in the 1600's, they depended on our bays and tidewaters for growth of the area. A variety of types of vessels were necessary, thereby initiating the first industry of our country. The canal system of Virginia, extending from Richmond to Lexington and Buchannan, provided the access from the coast westward in the 1800's.

Part Two, 8 minutes

This history of transportation in Virginia unfolds as steam power is introduced in the 1800's. Shipbuilding and repair become more prominent, and freighters and aircraft carriers are developed to bring our American maritime heritage up to date.



THE JELLYFISH: A COELENTERATE (E,I)
8 minutes

The purpose of this filmstrip is to present to the student information concerning animal activities. Reproduction, growth, feeding and specializations are covered, using the jellyfish as a commonly known representative coelenterate. The economic impact of the organism is also brought to the attention of the student.

LIFE IN THE SEA (E,I)
2 filmstrips, 2 cassettes
14 minutes each

Nearly three-quarters of the Earth's surface is covered by water, and an incredible number and variety of life forms make their homes in this vast underwater realm. They flourish in every part of the sea, from the sunlit surface waters to the cold, dark abyss. Although scientists have discovered much about sea life, the ocean remains largely an unexplored wilderness. The two filmstrips in this series picture and describe some of the living things that inhabit sandy beaches, rocky coasts, salt marshes, kelp beds, coral reefs and the open sea. The interdependence of marine life, from microscopic plants to giant whales, is emphasized. The filmstrips may be used to

introduce a study of sea life or to summarize such a study. They encourage children to explore a variety of sea environment and to learn more about the plants and animals that can be found there.

Titles include:
Life Near the Shore
Life in the Open Sea

THE LIFE OF FISHES (H)
6 filmstrips, 6 cassettes
14–15 minutes each

Join Captain Cousteau in an indepth view of life in the sea. Titles in this series include:

1. THE SHAPING OF LIFE
From primitive nameless creatures that wriggled in shallow waters hundreds of millions of years ago, fishes have slowly evolved into sleek and efficient aquatic animals. Theirs has been a long, continuous line of development, unlike man, who left the water, and the dolphin, which returned. Through this gradual adaptation to life underwater, fishes have become masters of their medium.

2. THE RANGE OF LIFE
The sea is made up of varied provinces determined by the underwater landscape and conditions. Each environment has given rise to unique spheres of life where fishes have developed distinctive bodies and habits. Virtually every stream, lake and sea on the planet has been invaded by fishes, and the adaptations they have accomplished illustrate their perseverance and flexibility.

3. TWO UNDERSEA ECOSYSTEMS
Along the Continental Shelf, where most of the fishes in the sea live, communities have developed which rival mankind's cities in their diversity and social interaction. One form of the community, the coral reef, covers 25 times as much of the planet's surface as the United States. Another, the murky kelp bed, resembles a forest. These watery ecosystems illustrate both webs of balance in nature and the importance of such systems to man's own future.

4. SURVIVAL
Like other animals, fishes spend most of their time eating and avoiding being eaten. Some are voracious carnivores, but most are not. In order to defend themselves, fishes have developed highly original and bizarre systems of camouflage, protective coloration, and weaponry. The drama of the daily battle to survive is augmented by a long-term struggle to maintain the species. In many ways, the problems of procreation illustrate the mortal game of hide and seek that permeates life underwater.

5. THE ROOTS OF INTELLIGENCE
Compared with man, the fish seems like a creature of pure instinct. Yet certain species are capable of extraordinary accomplishments guided by smell, the chemistry of water, unerring instinct or strange intelligence. Some fishes have shown unusual curiosity, some an ability to learn. Conditioned by their aquatic environment, fishes have evolved their own kind of water intelligence — a tough, durable sense of what is necessary.

6. THE FRAGILE BALANCE
What seems like a vast and unassailable bounty of life is in reality a precarious linkage. The destruction of one element in the sea's food chains could upset the entire system. Man has always co-existed with this fragile balance. But today he seeks to understand how his own progress threatens fish and other marine creatures ... and even the water cycle which makes life on Earth possible.

LIFE ON THE TIDAL MUDFLATS – ELKHORN SLOUGH (I)
13 minutes

The flora and fauna of Elkhorn Slough of Monterey Bay, California, is described in this filmstrip.

MARINE SCIENCES CAREER KIT (I)
18 minutes

The filmstrip shows the work of several types of marine scientists. Some of the highlights include marine biologists collecting and examining specimens with special equipment,

marine geologists taking core samples from the ocean floor and marine engineers developing new equipment for sea exploration. At the end of the filmstrip, several whimsical pictures rendered by an artist suggest future developments in oceanography. Though intended to be light and entertaining, these ideas are founded in fact.

MOBY DICK (I)
15 minutes

The classic story of the infamous white whale unfolds in this filmstrip. The young reader can also read a shortened illustrated version of Herman Melville's masterpiece.

THE RESTLESS SEA (E)
5 filmstrips, 5 cassettes
6–8 minutes each

The ocean's mysteries — its storehouse of food and resources — and its tremendous dangers — all take shape before your students in this colorful filmstrip journey.

Youngsters will discover:
- how ocean tides and winds create waves that travel for thousands of miles;
- blind fish that dwell in the black depths;
- the chemical composition of seawater, i.e. an "Earth soup" with all of the ingredients needed to produce life;
- the beautiful sea anemone, a flower–animal on the ocean floor;
- the warm and cold ocean currents that affect sea life worldwide.

Titles in the series include:	
Oceanography – An Overview	6:15
Tides, Winds and Waves	6:30
Mr. C. Waters	7:00
Surface and Deep Ocean Currents	7:45
Life in the Sea – An Unfolding Story	7:30

THE SEA (E,I,H)
2 filmstrips, 2 cassettes
15 minutes each

The Sea has been designed to provide the student in every grade level with a total multi–sensory experience. Exciting beautiful photographs of the sea and life around and in it, accompanied by sounds and music that capture the essence of what the student is viewing, stimulate the imagination. Pictures and sounds together provide a teaching tool directed toward creativity in many curriculum areas. There is no narration to intrude or distract. Students can become totally absorbed in what they are viewing before they are given the opportunity to communicate in a wide variety of media and techniques.

SEA LIFE (E,I)
5 filmstrips, 5 cassettes
12–14 minutes each

Varied adaptations of marine life, from microscopic plankton to Earth's largest animals, the whales. The beauty and usefulness of shells, and how mollusks form them. Plans for preserving the saltwater environment.

Titles in this series include:

THE SALTWATER WORLD
Study plankton, coral and fish life, and explore their delicate relationships.

THE SHELL BUILDERS
Examine the soft–bodied shell builders and their intricate lime–walled homes.

CURIOSITIES OF THE SEA
See some of the ocean's bizarre oddities: the seahorse, the olive sea snake, the viperfish.

SURFACE BREATHERS: THE MAMMALS
Meet the ocean's mammals, once land dwellers, now readapted to life in the water.

THE OCTOPUS
A variety of offensive and defensive weapons helps the octopus find food and guard its den.

SHARKS Learning Shelf Kit (P)
20 minutes

After using this kit with your class, the student should be able to:

1. Gain an understanding of gills and how sharks breathe underwater.
2. Recognize the concept of predator as descriptive of most sharks — an animal that preys on other animals.
3. Identify three types of special equipment that people use to study sharks: SCUBA gear, cameras, cages.

SHARKS (E,I)
14 minutes

Sharks: streamlined, strong and curious ... with powerful bite and tough hide. An introduction to a variety of these remarkable creatures, from small sharks to some of the world's largest fishes. Fascinating facts ... mysteries remaining to be solved. Aspects of anatomy ... the way sharks live. How scientists learn about these great fishes.

20,000 LEAGUES UNDER THE SEA (I)
15 minutes

The story of Captain Nemo and the adventures on his giant submarine, the Nautilus, is depicted in this filmstrip. The young reader can also read a shortened, illustrated version of Jules Verne's classic.

UNDERSEA EXPLORATION (H)
4 filmstrips, 4 cassettes
14-15 minutes each

Join Captain Cousteau in the adventurous series entitled "Undersea Exploration." Titles in this series include:

1. MAN ENTERS THE SEA

For centuries man has explored the ocean's depths. Ancient divers made extraordinary descents without breathing aids seeking food and riches. When galleons laden with gold and jewels plunged to the sea floor, men invented equipment that would allow them to go deeper and search for these treasures. By the Twentieth Century, natural curiosity inspired devices which took man for the first time into the unseen regions of the sea.

2. CONQUEST OF THE DEPTHS
At its deepest, the ocean has been measured at more than seven miles. What kind of world is this sunless abyss? Scientific dredges bring up bits and pieces of it, but until men could travel there, most of our knowledge was pure theory. In the 1930's and 40's, two explorers, Beebe and Piccard, built vehicles to carry them into the most remote regions of Earth. What they found was an eerie world of absolute darkness and fearsome-looking creatures.

3. FREEDOM UNDER WATER
Standing vertically under water, helmeted divers are an unnatural ocean phenomenon. In the moving fluid of the sea, animals range horizontally, like birds. With the invention of the aqualung in 1943, a new era of underwater experience began for mankind. Unencumbered by heavy diving gear and air hoses to the surface, men now roam the oceans in the free, smooth fashion of sea creatures.

4. LIVING UNDER THE SEA
Along the coasts of each continent are shelf-like ocean areas rich in marine life and minerals. As a whole, these relatively shallow areas represent an unexplored wilderness the size of Africa. In the same decade man first landed on the moon, he began to build undersea settlements on these Continental Shelves. In ocean habitats men and women can live for weeks at a time, studying life forms of the sea first hand, and learning how to preserve and protect the Earth's water environments.

VIRGINIA'S MARSHES - A WORLD BETWEEN (I,H,A)
10 minutes

The salt marshes of Virginia are the predominant wetland in the Commonwealth. In addition to providing important marine resources, marshes prevent erosion and provide shoreline protection. The beauty and fragility of the environment is captured in the beautiful photography of this filmstrip. Man has been known to destroy the bounty and beauty of this valuable land. However, through research and legislation our marshes are now protected against misuse under the Virginia Wetlands Act.

This filmstrip is also available for sale at $2.50.

WHALES Learning Shelf Kit (P)
20 minutes

After using this kit with your class, the student should be able to:
1. Identify the major features of whales.
2. Explain how whales breathe and communicate.
3. Distinguish humpback, killer and right whales.

WHAT IS A FISH? Learning Shelf Kit (P)
20 minutes

After using this kit with your class, the student should be able to:
1. Determine what fish have in common.
2. Name two ways fish defend or protect themselves.
3. Understand why fish have gills, that they may live in either salt water or fresh water and that many have streamlined shapes.

WHO OWNS THE OCEANS? (I,H,A)
15 minutes

The question of who owns the oceans, our planet's last frontier, is one of the most significant questions being debated in the world today. To show students just how significant, and to stimulate their thinking on possible answers and what those answers might mean to the future of our world, are the aims of this filmstrip program.

WORLD OF THE SEA (I)
14-15 minutes each

The vast resources of the sea are only just beginning to be recognized and developed. Long shrouded in mystery, the lifegiving ocean, her fascinating creatures and their unique habits define for intermediate level students the significance of our past and future relationship with the World of the Sea.

Group One: 3 filmstrips, 3 cassettes

Concepts covered in this series include:

1. Realm of the Sea: the ocean is introduced as a habitat for a variety of organisms. Simple geology, the properties of seawater, and our relationship with the sea are defined.

2. Plants of the Sea and Shore: the importance of plants as the source of life introduces a basic presentation of photosynthesis. Several varieties of marine vegetation are surveyed, including both plankton and larger plants. The interdependence of species is illustrated by the study of a short food chain.

3. Balance of Nature: the concepts of community and ecosystem are explored as they relate to the marine environment. Survival mechanisms are surveyed in terms of offensive and defensive weapons. Food chains and food webs lead into a discussion of balanced marine ecosystems and the ways in which people can upset them.

WORLD OF THE SEA (I)
14-15 minutes each

Group Two: 3 filmstrips, 3 cassettes

4. Marine Invertebrates: the major marine phyla are surveyed. Sea urchins and starfish are studied as representatives of the wholly marine phylum Echinodermata.

5. Marine Vertebrates; Fishes: the structural and behavioral adaptations of fish to life in the sea are examined. Our relationship

with and dependence upon these organisms is discussed.

6. Marine Vertebrates; Mammals: the biology of major groups of marine mammals is discussed. California sea otters and elephant seals are examined as examples of marine mammals.

FILMSTRIPS/RECORDS

THE ARCTIC OCEAN (E,I)
12 minutes

Life and research in the arctic region are explored in this program.

GEOLOGIC MEASUREMENTS AND MAPS (I,H)
6 filmstrips, 6 records
16-18 minutes each

This filmstrip series examines six different kinds of geologic measurements.

In MEASURING THE SHAPE OF THE LAND, a group of children using simple equipment make a contour map of a sand dune. By following the steps involved, the viewers are introduced to some of the fundamentals of topographic mapping — an activity they may want to try for themselves.

DETERMINING SEA LEVEL explores further the problem of measuring elevations. After first learning why sea level is used as a reference, we find out how to determine the level of the restless sea surface and how to measure elevations on land in relation to sea level.

MEASURING MOVEMENTS OF THE EARTH'S CRUST is an investigation of (1) how the Earth's crust moves during an earthquake and (2) whether or not it moves between earthquakes. Careful study of a triangulation net that was distorted by an earthquake in 1940 shows how the land moved at that time and how it has moved since. The measurements also suggest a partial explanation for the earthquake itself.

In MAKING A GEOLOGICAL MAP, we participate in the mapping of deformed sedimentary rocks and thus learn how their composition and structure are plotted on a contour map. The resulting geologic map allows us to "see" what is underground.

The last two filmstrips in the series concern the measurement of invisible quantities.

MEASURING UNDERGROUND TEMPERATURES explores rock temperatures near the Earth's surface, in a deep mine and in an oil well, and then investigates one possible explanation for the observed differences.

MEASURING DIFFERENCES IN GRAVITY illustrates the fundamental factors that affect the strength of gravitational attraction. Using an actual example in Texas, the filmstrip shows how these factors can be used to detect differences in rocks deep underground.

OCEANOGRAPHY – UNDERSTANDING OUR DEEP FRONTIER (I)
9 filmstrips, 9 records
15 minutes each

This series provides introductory information on the many aspects of marine science. Included in the series are the following titles:

An Introduction to Oceanography – a general view of oceanography and the scientific disciplines related to it.

1. Physical Oceanography – a study of the physical aspects of the sea.
2. Chemical Oceanography – the chemistry of seawater is discussed.
3. Geological Oceanography – geological features of the ocean basin are presented.
4. Biological Oceanography – the diversity of marine life is examined.
5. Ocean Engineering – oceanographic knowledge and engineering are combined in order to use the oceans, their contents and boundaries for the achievement of human objectives.

6. Marine Resources – the variety of resources is presented from an economic and ecological viewpoint.
7. Air – Sea interaction – the relationship of the oceans and the atmosphere is discussed.
8. A Career in Oceanography – the varieties of employment in the marine field are depicted in this program.

SEALAB II (E,I)
19 minutes

Man's research, especially aquanauts, and life in the sea are shown in this filmstrip.

SIREN SONG FOR SEAFOODS (I,H)
17 minutes

This colorful animated filmstrip introduces future homemakers to the wide variety of seafoods. Tips on purchasing and storing fish, both fresh and frozen, are discussed, including the market forms of seafood. A variety of methods for preparing seafood are discussed, in addition to some nutritional information. After viewing this filmstrip your class will be anxious to taste-test the wide range of flavor and textures of seafood.

UNDERWATER ACOUSTICS (E,I)
9 minutes

Explores the topic of natural and artificial sound in the ocean.

THE FOOD CHAIN CONCEPT (I)
20 slides

The order of organisms from producer to herbivore to carnivore is explained in this program.

INTRODUCTION TO INTERTIDAL PLANTS AND ANIMALS (I,H,A)
70 slides with cassette tape

This slide set illustrates and discusses many of the common plants and animals found in rocky tidepools along the Pacific coast.

SAVANNAH VOCABULARY (E)
55 slides

A collection of slides emphasizing the vocabulary on ecosystems.

SURVIVAL IN COLD WATER (H,A)
19 slides (short version)
47 slides (long version)

The purpose of this program is to increase awareness of the problem of hypothermia (freezing to death).

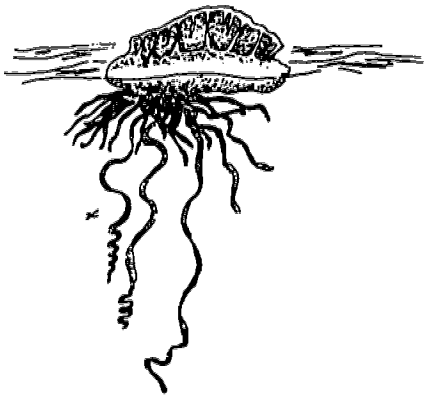
THE TIDES (I)
20 slides

The alternate rising and falling of the ocean surfaces and the relationship to the sun and moon is the subject of this slide program.

SLIDE PROGRAMS

DANGEROUS MARINE ORGANISMS (I)
20 slides

Most people are only aware of sharks as the dangerous creature of the sea. This short – program identifies some species of fish, mollusks, echinoderms, coelenterates and reptiles to beware in the marine environment.



FILMSTRIPS W/O SOUND

THE CORAL REEF (I)
72 frames

The nature and beaty of coral and coral reefs and the types of life which inhabit the reef are depicted.

CREATURES OF THE SEA (I)
82 frames

The variety of life in the sea and the provinces in which the different types of life flourish are presented.

LANDSCAPES OF THE SEA (I)
58 frames

The structures of the ocean basin in the Arctic, Antarctic, Atlantic and Pacific Oceans are explored in this filmstrip.

MIGHTY CURRENTS OF THE SEA (I)
64 frames

Study of the currents of the world and factors affecting them such as the sun's heat, rotation of the Earth and the wind are discussed in this filmstrip. The Ice Age is also studied in the second half of the program.

THE MIRACLE OF THE SEA (I)
82 frames

This filmstrip provides information on the formation of our water planet and the structure of the ocean basins. Characteristics of the Atlantic Coast are compared to those of the Pacific Coast. The effects of the currents, trade winds, tides, waves, temperature, salinity and density are also explained.

ROCKY SHORES (I)
39 frames

Along many thousands of miles of shoreline is a tidal zone called rocky shores. The variety of life that inhabits this environment is shown.

SHARKS (I)
65 frames

The anatomy of sharks is compared to that of true fish; reproduction, types of sharks, accounts of shark attacks, feeding habits and their remarkable senses are also depicted in this filmstrip.

WHALES (I)
76 frames

Adaptation of the vanishing giants, and the history of whaling techniques are topics presented in this filmstrip. Also included are photographs of whalebone art, called scrimshaw.

RECORDS

SONGS AND SOUNDS OF THE SEA

Hear gulls cry out and waves wash by as the chanteyman and his bold shipmates round Cape Horn, singing rousing work songs and ballads. Share a twilight moment from the past that tells of the hard and lonely life aboard the great clipper ships that once sailed the seven seas. 14 stereo selections.

SONGS OF THE HUMPBACK WHALE

Whale songs have probably been heard, though seldom recognized as such, ever since man began to make voyages by sea. In the literature of whaling, alone, there are many accounts of strange, ethereal sounds reverberating faintly through a quiet ship at night, mystifying sailors in their bunks. Long

after such experiences were first mentioned, scientists were able to explain what caused them.

Listen to these "songs" which have been recorded by Dr. Roger S. Payne.

PUBLICATIONS

THE ADVENTURES OF LITTLE OYSTER

Robert S. Bailey and Fred C. Biggs. 1968. Virginia Institute of Marine Science, Gloucester Point, Virginia. For younger children up to grade 6, the story of Little Oyster's life unfolds. Illustrated. 23 pp. $0.40.

AQUACULTURE THESAURUS

James A. Lanier, Frances L. Lawrence, Elaine V. Collins and Mary B. Hollinger. 1977. Scientific Report 79. The National Aquaculture Information System is a computerized bibliographic system covering recent aquaculture research and technological progress. This publication presents the cross-referenced alphabetized list of descriptor terms available for information retrieval. Instructions for using the system are included. 145 pp. $3.00.

BIOLOGICAL OCEANOGRAPHY

Christopher M. Dewees and Jon K. Hooper. April, 1975. Sea Grant Marine Advisory Publication, University of California, Berkeley. The diversity of plant and animal life in the ocean is discussed in this booklet. Food chains, food pyramids and plankton (both plant and animal) are described. 5 pp. $0.10.

THE BLUE CRAB AND ITS FISHERY IN THE CHESAPEAKE BAY

W. A. Van Engel. Virginia Institute of Marine Science, Gloucester Point, Virginia. Part One: June, 1958. 12 pp. Part Two: September, 1962. 10 pp. Part One discusses general information about this crustacean, its mating habits, spawning, early development, growth, migration and diet. Also includes definitions of blue crab terms. Part Two deals specifically with the fishery of the crab, including crab pots, trotlines and dredges. $0.10 each.

COASTAL OCEANIC AWARENESS STUDIES (COAST) INVENTORY

Delaware Sea Grant Program, University of Delaware, Newark. A multidisciplinary collection of learning experiences designed to increase the knowledge of the general student about the marine coastal environments. $0.20.

COMMON SEA SHELLS OF DELAWARE

Glenn H. Aprill. Marine Advisory Services Publication, University of Delaware, Newark. This informative pamphlet on mollusks, bivalves and gastropods is illustrated and has photographs of the various shells found in both Delaware and Virginia. Leaflet. $0.10.

ECOLOGY OF THE INTERTIDAL ZONE

Christopher M. Dewees and Jon K. Hooper. 1975. Sea Grant Marine Advisory Publication, University of California, Berkeley. This booklet defines the intertidal zone and describes the adaptations of life the organisms of this zone must exhibit in order to survive. 4 pp. $0.10.

ESTUARY ECOLOGY

Christopher M. Dewees and Jon K. Hooper. 1975. Sea Grant Marine Advisory Publication, University of California, Berkeley. The importance of the estuary is discussed as breeding and nursery area, feeding ground and resting spot for marine animals. Man's effect on the estuary and future of the estuary is mentioned. A glossary is included. 4 pp. $0.10.

EURASIAN WATER MILFOIL

Dexter Haven. Virginia Institute of Marine Science, Gloucester Point, Virginia. The pest plant Myriophyllum spicatum is a serious problem in many areas. The biology of the plant, the destruction that it causes and the use of herbicides as a control measure are discussed. 3 pp. $0.05.

FISH: THE MOST-ASKED QUESTIONS

NOAA. April 1973. A bouillabaise of fascinating facts about shellfish, other invertebrates and finfish in the marine environment. 8 pp. $0.15.

A GUIDE TO THE IDENTIFICATION OF MARINE PLANTS AND INVERTEBRATE ANIMALS OF TIDEWATER VIRGINIA

Virginia Berry Niemeyer and Dorothy M. Martin. 1967. Virginia Institute of Marine Science, Gloucester Point, Virginia. This is a guide to the flora and fauna of Tidewater Virginia collected during the summer of 1963. It is not intended to be complete, but rather representative of the more abundant species of 1963. Collecting and preservation tips, classification and description of plants and animals, a glossary and references are included. Illustrated. 82 pp. $2.00.

GYOTAKU

Christopher M. Dewees and Jon K. Hooper. August 1974. Sea Grant Marine Advisory Publication, University of California, Berkeley. The technique of Japanese fish printing is explained. Leaflet. $0.10.

IDENTIFYING BLUEFIN TUNA

Frederick H. Berry. Reprinted from Underwater Naturalist Volume 10, No. 2. A guide to aid the public in the identification of all the bluefin tuna. Leaflet. 4 pp. Free.

JAMES RIVER HYDRAULIC MODEL

Lawrence W. Mason and Fred C. Biggs. Virginia Institute of Marine Science, Gloucester Point, Virginia. A description of how the model of the River was built, its purposes and its uses are summarized in this pamphlet. 7 pp. $0.25.

CONSUMER'S GUIDE TO KEPONE AND SEAFOOD

Governor's Kepone Task Force. 1977. Virginia Department of Health, Richmond, Virginia. The discovery of Kepone in Virginia's environment and the lack of information about its long-term effect on human health has shaken consumer confidence in the safety of seafoods and is only being restored. This booklet will help you make more informed choices about eating seafood. 8 pp. Free.

KEY TO SOME OF THE MARINE DIATOM GENERA IN VIRGINIA WATERS

R. A. Mulford and M. H. Roberts, Jr. 1965. Virginia Institute of Marine Science, Gloucester Point, Virginia. Preliminary generic identifications of diatoms with descriptions and drawings to supplement the key. Glossary and bibliography included. 23 pp. $0.25.

MARINE EDUCATION BIBLIOGRAPHY

Christopher M. Dewees and Jon K. Hooper. October, 1975. Sea Grant Marine Advisory Publication, University of California, Berkeley. A selected bibliography of marine resource topics including algae, marine birds, environment and biology, fish and fisheries, invertebrates and seashore life, marine mammals, oceanography and SCUBA diving. Not annotated. 16 pp. $0.25.

MARINE MAMMALS

Christopher M. Dewees and Jon K. Hooper. May 1975. Sea Grant Marine Advisory Publication, University of California, Berkeley.

Whales, dolphins, seals, sea lions, walruses and sea otters are warm-blooded, air breathing marine mammals that nourish their young on mother's milk, just like land animals. This booklet offers information on each of the marine mammals and also includes a glossary and references. Illustrated. 7 pp. $0.20.

MARINE MANPOWER: AN INITIAL ASSESSMENT

Edward F. Mackin and Roger D. Anderson. May, 1976. MTS Journal, Vol. 10, No. 4. Employment settings of marine careers are defined. Includes tables of 1975 marine employment by industry and by occupational family, also projected 1980 figures. 12 pp. $0.20.

MARINE RESOURCES OF ATLANTIC COAST (LEAFLETS)

Atlantic States Marine Fisheries Commission, 1717 Massachusetts Avenue, NW, Washington, DC 20036.

1. Out of print.
2. Atlantic Menhaden... A most Abundant Fish. December, 1975. 4 pp. $0.12.
3. The Soft-shell Clam. October, 1965. 4 pp. $0.12.
4. Southern Shrimp. October, 1965. 6 pp. $0.17.
5. The American Lobster. October, 1966. 6 pp. $0.17.
6. Summer Flounder. October, 1966. 4 pp. $0.12.
7. American Shad. October, 1966. 4 pp. $0.12.
8. Striped Bass. October, 1966. 4 pp. $0.12.
9. Haddock. October 1968. 4 pp. $0.12.
10. Out of print.
11. Oyster. October, 1968. 8 pp. $0.20.
12. Marine Bait Worms. June, 1970. 4 pp. $0.12.
13. Spotted Sea Trout. June, 1970. 4 pp. $0.12.
14. Hard Clam. December, 1975. 8 pp. $0.20.
15. Silver Hake. October, 1973. 4 pp. $0.12.
16. Spiny Dogfish. October, 1973. 4 pp. $0.12.
17. Edible Blue Crab. October, 1973. 8 pp. $0.20.
18. Weakfish. September, 1976. 4 pp. $0.12.

Characteristics, distribution, harvesting, biology, spawning, uses and research of each of the species is discussed in each publication put out by the Atlantic States Maine Fisheries Commission in their series entitled Marine Resources of the Atlantic Coast.

OCEAN CURRENTS

Christopher M. Dewees and Jon K. Hooper. January, 1976. Sea Grant Marine Advisory Publication, University of California, Berkeley. Types of current and experiments for the study of currents are illustrated. One sheet. $0.05.

THE OCEANS AND YOU

Marine Technology Society. 1739 M Street, NW, Suite 412, Washington, D.C. The Oceans and You, prepared by the Marine Technology Society, answers many questions about the oceanography field, such as employment outlook, education in the field, existing publications, existing organizations, etc. Designed for students of all ages and anyone interested in finding out what the oceanography field is like. Order form free (publication costs $3.00 from MTS, Washington, D.C.).

PHYLA

Oceanographer of the Navy, Washington, D.C. The various phyla, classes and others are defined and illustrated; from the microscopic one-celled animals up to the largest chordates. 12 pp. $0.35.

PHYSICAL OCEANOGRAPHY

Christopher M. Dewees and Jon K. Hooper. February, 1976. Sea Grant Marine Advisory Publication, University of California, Berkeley. The ocean floor, tides, waves, nature of

seawater and upwelling are described. Includes references and illustrations. 9 pp. $0.20.

PLANKTON

Dr. Paul A. Sandifer. The International Marine Angler, March-April, 1974. The importance and role in the food chain of both phytoplankton and zooplankton are discussed. 4 pp. $0.10.

TIPS ON KEEPING SALTWATER AQUARIA

James A. Lanier III and Fred C. Biggs. Virginia Institute of Marine Science, Gloucester Point, Virginia. Four very important points - new water, overcrowding, overfeeding and toxic materials - are discussed to assist you with your saltwater aquarium. Don't let the "noot" ruin your aquarium! Leaflet. Free.

VIRGINIA'S ANADROMOUS FISHES AND THE SHAD IN VIRGINIA WATERS

William H. Massman and Robert S. Bailey. Reprinted from Virginia Wildlife, April, 1956. Sent as one publication. The long and hazardous spawning migration of Virginia's anadromous fishes - marine fishes that migrate to fresh water for spawning (river herring, rockfish, white perch, sturgeon and sea lamprey) are discussed in this publication. Also included are a brief history of the shad run, angling for shad and a description of American shad, hickory shad, glut herring and alewife. Illustrated. 4 pp. $0.10.

VIRGINIA'S MARSHES AND TIDAL WETLANDS OF VIRGINIA

Virginia Wildlife. January, 1972. What a marsh is and its contribution to the ecosystem are briefly discussed. A plea to save this valuable environment and a pictoral description of the definitional wetlands are also included. Two sheets. Free.

WHO PAYS FOR A CLEAN STREAM?

League of Women Voters. April, 1966. Funding is the main problem in water pollution, not lack of knowledge. This paper published by the League of Women Voters answers the title question. 4 pp. $0.25.

PREPARATORY STUDIES

Virginia Institute of Marine Science, Gloucester Point, Virginia. Lists entrance requirements for the graduate program of the School of Marine Science of the College of William and Mary. Free.

PRESSING ALGAE

Christopher M. Dewees and Jon K. Hooper. December, 1975. Sea Grant Marine Advisory Publication, University of California, Berkeley. Instructions for the mounting of algae are listed. Includes a list of materials needed, a glossary and a reference list. One sheet. $0.05.

SAMPLING PLANKTON

Christopher M. Dewees and Jon K. Hooper. May, 1976. Sea Grant Marine Advisory Publication, University of California, Berkeley. Describes a method of collecting plankton with a nylon stocking. Illustrated. One sheet. $0.05.

SHARKS AND MAN ... A PERSPECTIVE

February, 1976. Sea Grant Program, University of Florida, Gainesville. This pamphlet answers 14 of the most asked questions about sharks. Leaflet. Free.

SHIPWORMS AND OTHER MARINE BORERS

Michael Castagna. 1961. Virginia Institute of Marine Science, Eastern Shore Laboratory, Wachapreague, Virginia. The classification, description, distribution and damage caused by mollusks (shipworms), crustaceans (gribbles) and other groups are discussed. Control and prevention are also mentioned. 6 pp. $0.10.